

CLAIMS

What is claimed is:

1. A method of facilitating mobile station operations in a wireless communication network, the method comprising:
 - receiving a request at the mobile station to perform a designated task;
 - determining whether a current operating mode of the mobile station offers sufficient idle time to perform the designated task within a desired time; and
 - requesting additional idle time from the wireless communication network if sufficient idle time is not available at the mobile station .
2. The method of claim 1, wherein the designated task comprises a positioning operation associated with locating the mobile station, and wherein the request identifies the positioning operation and identifies the desired time for performing the positioning operation.
3. The method of claim 1, further comprising determining the desired time from information included in the request received at the mobile station.
4. The method of claim 1, wherein determining whether the current operating mode of the mobile station offers sufficient idle time to perform the designated task comprises determining whether available background processing time is sufficient for completing the designated task within the desired time.

5. The method of claim 3, further comprising performing the designated task using the available background processing time where the available background processing time is sufficient to complete the designated task within the desired time.

6. The method of claim 3, wherein determining whether available background processing time is sufficient for completing the designated task within the desired time comprises at least in part evaluating a number of currently allocated idle time per TDMA multiframe.

7. The method of claim 3, wherein determining whether available background processing time is sufficient for completing the designated task within the desired time comprises determining if a cumulative time comprising intervals between ongoing transmit and receive operations in combination with currently designated communication idle times is sufficient to complete the designated task before expiration of the desired time.

8. The method of claim 1, further comprising receiving a response message from the wireless communication network, wherein the response message indicates whether the request from the mobile station for additional idle time is granted.

9. The method of claim 8, wherein, if additional idle time is granted, the response message further indicates one or more future idle times, and further comprising performing at least a portion of the designated task during the one or more future idle times.

10. The method of claim 9, wherein the one or more future idle times are identified time blocks within repeating time-division-multiple-access (TDMA) frames, and further comprising performing the designated task during the identified time blocks.
11. The method of claim 1, further comprising performing the designated task during available idle times, and without requesting additional idle time, if the current operating mode offers sufficient idle time to perform the designated task within the desired time.
12. The method of claim 1, wherein the mobile station comprises a GPRS terminal and the wireless communication network comprises a GPRS network, and further wherein receiving a request at the mobile station to perform a designated task comprises receiving a location services request message defining a desired positioning operation to be performed by the mobile station.
13. The method of claim 1, wherein the mobile station and the wireless communication network communicate using repeating TDMA frames, and wherein requesting additional idle time from the wireless communication network if sufficient idle time is not available at the mobile station comprises requesting additional units of idle time in forthcoming ones of the repeating TDMA frames.
14. A method of facilitating mobile station operations in a wireless communication network, the method comprising:
- receiving an idle time request at the network from a mobile station requiring additional idle time to perform a designated task;
 - determining whether to grant the idle time request; and

sending a response to the mobile station identifying forthcoming additional idle time to be used by the mobile station for performing the designated task if the idle time request is granted.

15. The method of claim 14, further comprising sending a response to the mobile station indicating a request refusal if the idle time request is not granted.

16. The method of claim 14, wherein receiving an idle request at the network from a mobile station requiring additional idle time to perform a designated task comprises receiving a request for one or more units of idle time within one or more forthcoming TDMA frames used for communication between the mobile station and the wireless communication network.

17. The method of claim 16, wherein the TDMA frames comprise repeating multiframe, each multiframe comprising a number of communication frames and a default number of idle frames, and wherein sending a response to the mobile station identifying forthcoming additional idle time to be used by the mobile station for performing the designated task if the idle time request is granted comprises identifying one or more radio frames in one or more forthcoming multiframe to be used as additional idle time by the mobile station.

18. The method of claim 17, wherein the wireless communication network comprises a GPRS network and the mobile station comprises a GPRS terminal, and wherein identifying one or more radio frames in one or more forthcoming multiframe to be used as additional idle time by the mobile station comprises identifying selected radio blocks

in one or more forthcoming 52-multiframes on a packet data channel (PDCH) to be used by the GPRS terminal as additional idle time for performing the designated task.

19. The method of claim 14, wherein determining whether to grant the idle time request comprises determining whether an acceptable distribution of additional idle time over one or more forthcoming TDMA frames exists in consideration of ongoing user scheduling involving a plurality of mobile stations, including the mobile station from which the idle time request was received.

20. The method of claim 19, wherein determining whether an acceptable distribution of additional idle time over one more forthcoming TDMA frames exists comprises determining whether ongoing communication scheduling will permit the network to allocate the requested amount of additional idle time within a desired time limit.

21. The method of claim 20, wherein the network receives indication of the desired time limit as part of the idle time request message.

22. The method of claim 21, wherein the network knows *a priori* the desired time limit.

23. The method of claim 14, further comprising sending a command to the mobile station to perform the designated task, and wherein the mobile station sends the idle time request responsive to receiving the command from the wireless communication network.

24. The method of claim 23, wherein sending a command to the mobile station to perform the designated task comprises:
- determining that the mobile station is required to perform the designated task;
 - identifying a desired time limit for performance of the task; and
 - forming the command such that the command indicates the designated task and the desired time limit.
25. The method of claim 14, further comprising:
- receiving a location request from a third party at the network for the mobile station;
 - determining a required location accuracy and a required response time for the location request;
 - transmitting a location command to the mobile station from the network; and
 - receiving the idle time request at the network from the mobile station responsive to transmitting the location command.
26. A mobile station including a radio frequency (RF) transceiver to communicate with a wireless communication network, and further including processing logic programmed to:
- determine whether background processing time in a current mode of operation is sufficient to perform a designated task within a defined time limit; and
 - request additional idle time from the network if the background processing time is not sufficient to complete the designated task within the defined time limit.

27. The mobile station of claim 26, wherein the processing logic is further programmed to perform one or more positioning operations facilitating determination of the location of the mobile station within a geographic area covered by the network.

28. The mobile station of claim 27, wherein the processing logic is further programmed to process a location command received at the mobile station from the network to identify a requested positioning operation as the designated task, and the defined time limit for completing the requested positioning operation.

29. The mobile station of claim 28, wherein the processing logic generates a request for additional idle time based on whether the current operating mode provides sufficient idle time for completing the requested positioning operation within the defined time limit.

30. A wireless communication network operative to support wireless communication with a plurality of mobile stations, and programmed to:

receive a request for additional idle time from a mobile station; and

determine whether to grant the request based on ongoing communication

scheduling operations involving the plurality of mobile stations;

determine a particular allocation of additional idle time over one or more

forthcoming TDMA periods based on the request; and

transmit a request response to the mobile station identifying whether the request

is granted, and, if so, the particular allocation of additional idle time in the

one or more forthcoming TDMA periods.

31. The network of claim 30, wherein the network is operative to avoid communication with the mobile station during times corresponding to the particular allocation of idle time in the forthcoming TDMA periods.

32. The network of claim 30, wherein the network is operative to transmit a task request to perform a designated task to the mobile station, and wherein the task request specifies the designated task and a defined time limit for performing the designated task at the mobile station.

33. The network of claim 32, wherein the designated task comprises a positioning operation related to determining a location of the mobile station within the network, and wherein the network is operative to transmit the task request based on receiving a location query for the mobile station from an external system communicatively coupled to the network.

34. The network of claim 30, wherein the network comprises a base station system operative to perform user scheduling to provide TDMA communication service to the plurality of mobile stations.

35. The network of claim 34, wherein the base station system is operative to determine whether to grant the request for additional idle time based on current user scheduling operations.

36. The network of claim 34, wherein the network is operative to determine a number of required TDMA frames required to fulfill the request for additional idle time received from the mobile station, and determine the particular allocation of idle time over

forthcoming TDMA periods based on designating forthcoming TDMA frames as idle frames.

37. The network of claim 36, wherein the network is operative to designate TDMA frames as idle frames by designated selected ones of forthcoming radio blocks in forthcoming TDMA multiframes as idle times for use by the mobile station.